

ABSTRACT OF THE DISCLOSURE

Methods and devices are disclosed for carrying out multiple chemical reactions. A plurality of electrodes supported by a semiconductor substrate is brought into proximity with a reaction medium, which comprises reagents for carrying out the chemical reactions. An item of numerical data is sent to storage means in each of a plurality of cells within the semiconductor substrate by means of a data bus. The item of numerical data is representative of an electric signal. An address is sent to address decoders in communication with the storage means. As a result, the item of numerical data is stored in the storage means. Electric signals are selectively applied to each of the electrodes by means of a plurality of digital analog converters, each electrically coupled to a respective electrode. Each of the digital analog converters is associated with a respective cell. In this way, a chemical reaction takes place proximal to and in response to the field at the electrodes to which the electric signals are selectively applied. A particular feature of the present invention is that the medium may be non-aqueous.